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EXAMINER	
CHANDRAN, BIJU INDIRA	
ART UNIT	**PAPER NUMBER**
2835	

DATE MAILED: 02/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

8/

Office Action Summary	Application No.	Applicant(s)
	10/774,314	NOVOTNY, SHLOMO
	Examiner	Art Unit
	Biju Chandran	2835

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *23 December 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/17, 5/11,1/31/05.*

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-5, 7, 8, 11-13, 15-17, 19, 21-23, 26-29, 31-33, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patel et al. (PGPub US 2003/0147216), in view of O'Grady (US Patent 6,170,561).

   - With respect to claim 1, Patel et al. disclose an electronic component system comprising: an enclosure (10); one or more electronic components positioned within the enclosure (22, 24), at least one fan (12a, 12b) positioned within the enclosure for generating an airflow across the one or more electronic components (paragraph 0031), a heat exchanger for cooling the airflow (18a, 18b, paragraph 0026). While Patel et al. recognize the importance of adequately and reliably cooling the enclosed electronic components (paragraph 0006-0010, also note dual heat exchangers – 18a & b, and dual fans – 12a & b provided for redundancy), and the susceptibility of computer cooling system failure to failure of cooling support systems of the data center housing the computer (paragraph 0010), they do not disclose a phase

change material exposed to the airflow within the enclosure generated by the fan for absorbing heat from the airflow upon a failure associated with the heat exchanger. O'Grady (US patent 6,170,561) disclose a back up cooling device for electronic components comprising a phase change material for absorbing heat from the airflow upon a cooling system failure (failure of cooling support systems of the data center housing such computers as mentioned in column 1, lines 20-25) associated with electronic component systems. It would have been obvious to one of ordinary skill in the art at the time the invention was made to create a system for permitting orderly shutdown of electronic components by incorporating the phase change material taught by O'Grady in the electronic component system disclosed by to Patel et al., so as to provide repair time by delaying electronic component failure after cooling system failure (O'Grady, column 2, lines 25-30).

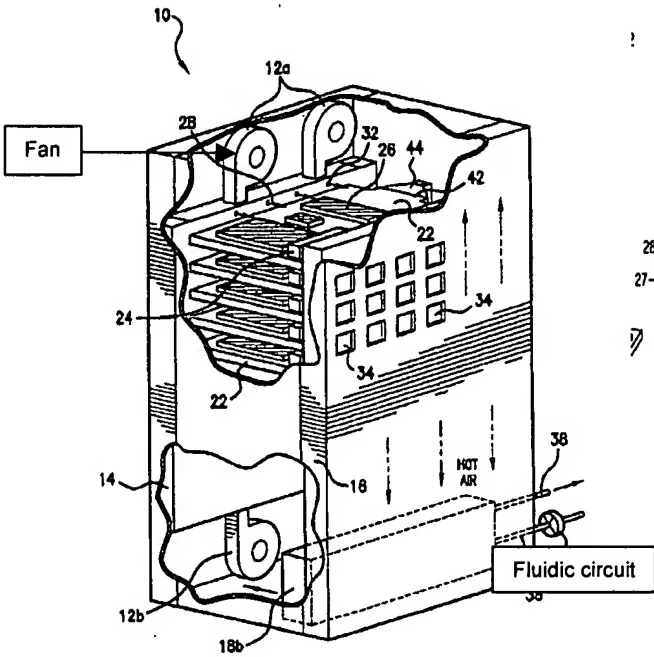

FIG.2

Patel et al.
(2003/0147216)

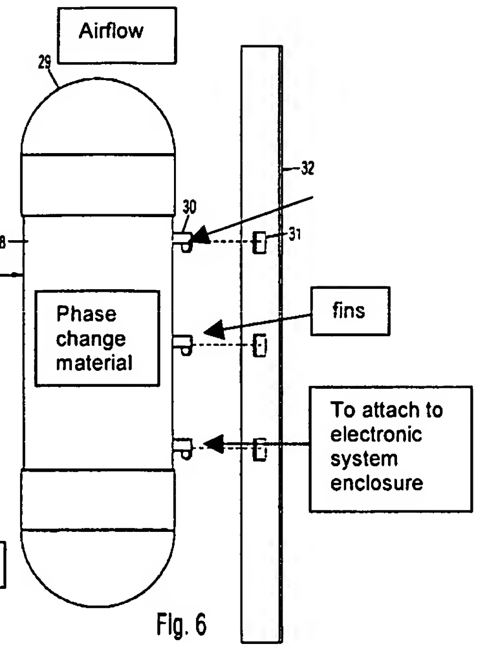

Fig. 6

O'Grady
(6,170,561)

- With respect to claim 2, O'Grady further discloses that the phase change material has a phase change temperature that is above a temperature of the airflow when there is no failure associated with the heat exchanger, and below a maximum operating temperature of the one or more electronic components (O'Grady, column 4, lines 50-60).
- With respect to claim 3, Patel et al. further discloses that the heat exchanger is a fluid to air heat exchanger (Patel et al., Paragraph 0026).

- With respect to claim 4, Patel et al. further discloses that the fluid to air heat exchanger is coupled to a fluidic circuit (Patel et al., Paragraph 0028).
- With respect to claim 5, Patel et al. further discloses that the fluidic circuit circulates one of a refrigerant and water (Patel et al., Paragraph 0028).
- With respect to claim 7, O'Grady further discloses that the phase change material is enclosed in a heat conductive container (O'Grady, column 2, lines 21-22).
- With respect to claim 8, O'Grady further discloses that the container includes fins (O'Grady, Fig 6, "30").
- With respect to claim 11, Patel et al. further discloses a temperature sensor for sensing temperature within the enclosure; and a high temperature indication indicative of a high temperature within the enclosure (Patel et al., Paragraphs 0033-0035), the high temperature being lower than a phase change temperature of the phase change material (O'Grady, lines 50-55).
- With respect to claim 12, O'Grady further discloses that the phase change material is a material chosen from the group of materials consisting of a paraffin, a hydrated salt, a metal, an alloy, and an organic acid (O'Grady, column 6, line 20).

- With respect to claim 13, Patel et al. further discloses at least one fan (12a, 12b) that recirculates air within the enclosure (Patel et al., paragraph 0025).
- With respect to claim 15, Patel et al. disclose a method of cooling one or more electronic components positioned in an enclosure, comprising: providing an air cooling element (18a, 18b, paragraph 0026) within the enclosure (10); generating an airflow (paragraph 0031) across the cooling element and one or more electronic components (22, 24) positioned within the enclosure. While Patel et al. recognize the importance of adequately and reliably cooling the enclosed electronic components (paragraph 0006-0010, also note dual heat exchangers – 18a & b, and dual fans – 12a & b provided for redundancy), and the susceptibility of computer cooling system failure to failure of cooling support systems of the data center housing the computer (paragraph 0010), they do not disclose cooling the airflow using a phase change material upon a failure in the cooling element, where the phase change material is positioned within the enclosure and exposed to airflow within the enclosure generated by the fan. O'Grady disclose a phase change material to be used as an additional cooling mechanism for electronic component systems by absorbing heat from the airflow (upon failure of cooling support systems of the data center housing such computers as mentioned in column 1, lines 20-25). It would have

been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the phase change material taught by O'Grady in the electronic component system disclosed by to Patel et al., so as to provide repair time by delaying electronic component failure after cooling system failure (O'Grady, column 2, lines 25-30).

- With respect to claim 16, Patel et al. further discloses that the air-cooling element includes moving fluid through a fluidic circuit (Patel et al., paragraph 0028). The fluidic circuit includes a fluid to air heat exchanger (Patel et al., paragraph 0026).
- With respect to claim 17, Patel et al. further discloses that the fluidic circuit is pumped with water and a refrigerant (Patel et al., paragraph 0028).
- With respect to claim 19, Patel et al. further discloses capability of indication indicative of a high temperature condition within the enclosure.
- With respect to claim 21, O'Grady further discloses that the phase change material has a melting point that is above a temperature of the airflow when there is no failure in the air cooling element, and below a maximum operating temperature of the one or more components (O'Grady, Column 4, line 51-60).
- With respect to claim 22, O'Grady further discloses that the phase change material is enclosed in a container (O'Grady, "11").

- With respect to claim 23, O'Grady further discloses that the phase change material is encapsulated in a surface positioned within the airflow (O'Grady, column 2, lines 10-20; column 5, lines 25-30).
- With respect to claim 26, Patel et al. disclose a cooling system comprising of an enclosure (10), one or more electronic components positioned in the enclosure (22, 24); means for generating an airflow (12a, 12b) across the one or more electronic components, cooling means for cooling the airflow (18a, 18b, paragraph 0026). While Patel et al. recognize the importance of adequately and reliably cooling the enclosed electronic components (paragraph 0006-0010, also note dual heat exchangers – 18a & b, and dual fans – 12a & b provided for redundancy), and the susceptibility of computer cooling system failure to failure of cooling support systems of the data center housing the computer (paragraph 0010), they do not explicitly disclose a phase change material positioned within the enclosure in the airflow generated by the fan. O'Grady discloses a phase change material for absorbing heat from the airflow upon a failure in the cooling means (failure of cooling support systems of the data center housing such computers as mentioned in column 1, lines 20-25), positioned in the airflow. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the phase change material taught by O'Grady in the electronic component system taught

by Patel et al., so as to provide repair time by delaying electronic component failure after cooling system failure (O'Grady, column 2, lines 25-30).

- With respect to claim 27, Patel et al. further discloses that the means for generating the airflow includes a fan (12a, 12b).
- With respect to claim 28, Patel et al. further discloses that the cooling means includes a fluid to air heat exchanger (Patel et al., Paragraph 0026).
- With respect to claim 29, Patel et al. further discloses that the fluid to air heat exchanger is coupled to a fluidic circuit that circulates one of a refrigerant and water (Patel et al., paragraph 0028).
- With respect to claim 31, O'Grady further discloses that the phase change material is enclosed in a container (O'Grady, "11").
- With respect to claim 32, O'Grady further discloses that the container includes fins (O'Grady, Fig 6, "30").
- With respect to claim 33, O'Grady further discloses that the phase change material is encapsulated in a surface positioned within the airflow (O'Grady, column 2, lines 10-20; column 5, lines 25-30).
- With respect to claim 35, O'Grady further discloses that the phase change material is a material chosen from the group of materials consisting of a paraffin, a hydrated salt, a metal, an alloy, and an organic acid (O'Grady, column 6, line 20).

2. Claims 6, 18 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patel et al. in view of O'Grady as applied above, and further in view of Meir (PGPub 2002/0191430).
   - Regarding claim 6, the system as disclosed by Patel et al., and modified by O'Grady satisfies all the limitations of claim 1. While Patel et al. do disclose that the heat exchanger could be any type of heat exchange device (paragraph 0026), they do not explicitly disclose the heat exchanger to be a thermoelectric device. Meir teaches a thermoelectric device heat exchanger. It would have been obvious to one of ordinary skill in the art at the time the invention was made, to incorporate the thermoelectric device heat exchanger taught by Meir in the electronic component system disclosed by Patel et al., to improve the efficiency of the cooling system (Meir, Paragraph 0018).
   - Regarding claim 18, the system as disclosed by Patel et al., and modified by O'Grady satisfies all the limitations of claim 15. While Patel et al. do disclose that the heat exchanger could be any type of heat exchange device (paragraph 0026), they do not explicitly disclose that the air-cooling element is a thermoelectric device. Meir teaches an air-cooling element which is a thermoelectric device. It would have been obvious to one of ordinary skill in the art at the time the invention was made, to incorporate the thermoelectric device air cooler taught by

Meir in the electronic component system disclosed by Patel et al., to improve the efficiency of the cooling system (Meir, Paragraph 0018).

- Regarding claim 30, the system as disclosed by Patel et al., and modified by O'Grady satisfies all the limitations of claim 26. While Patel et al. do disclose that the heat exchanger could be any type of heat exchange device (paragraph 0026), they do not explicitly disclose the cooling means to be a thermoelectric device. Meir teaches a thermoelectric device cooling means. It would have been obvious to one of ordinary skill in the art at the time the invention was made, to incorporate the thermoelectric device cooling means taught by Meir in the electronic component system disclosed by Patel et al., to improve the efficiency of the cooling system (Meir, Paragraph 0018).

3. Claims, 9, 10, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patel et al. in view of O'Grady as applied above and further in view of Fitch et al. (US Patent 6,317,321 B1).

- Regarding claim 9, the system disclosed by Patel et al. as modified by O'Grady satisfies all the limitations of claim 1. While O'Grady et al, discloses that the phase change material can be incorporated in different configurations (as shown in figures 3, 4, and 7), they do not disclose that the phase change material can be in micro-encapsulated form that is embedded in a coating applied to one or more of the

surfaces within the enclosure. Fitch et al. disclose a phase change material in microencapsulated form that is embedded in a coating applied to one or more surfaces within an electronic system enclosure (Fitch et al., abstract, figure 8, column 5, lines 4-7). At the time the invention was made, it would have been obvious to one of ordinary skill in the art, to incorporate the micro-encapsulated phase change material coated on multiple surfaces of the enclosure as taught by Fitch et al., on the system as taught by Patel et al. and modified by O'Grady, to make utilize the additional cooling capabilities of the micro-encapsulated surface coating without a significant increase in weight, size and cost (Fitch et al., column 3, lines 10-15).

- With respect to claim 10, the system disclosed by Patel et al. as modified by O'Grady satisfies all the limitations of claim 1. While O'Grady et al, discloses that the phase change material can be incorporated in different configurations (as shown in figures 3, 4, and 7), they do not disclose that the phase change material is encapsulated by a sealing coat. Fitch et al., discloses a phase change material in microencapsulated form that is encapsulated by a sealing coat (Fitch et al., column 5, lines 1-2). At the time the invention was made, it would have been obvious to one of ordinary skill in the art, to incorporate the micro-encapsulated phase change material encapsulated by a sealing coat as taught by Fitch et al., on the system

as taught by Patel et al. and modified by O'Grady, to utilize the additional cooling capabilities of the micro-encapsulated surface coating without a significant increase in weight, size and cost (Fitch et al., column 3, lines 10-15).

- With respect to claim 34, the system as disclosed by Patel et al. as modified by O'Grady satisfies all the limitations of claim 26. While O'Grady et al, discloses that the phase change material can be incorporated in different configurations (as shown in figures 3, 4, and 7), they do not disclose that one or more interior surfaces of the enclosure is coated with the phase change material. Fitch et al. disclose a phase change material coated on the interior surfaces of an electronics enclosure, where the phase change material is encapsulated by a sealing coat (Fitch et al., abstract, figure 8, column 5, lines 1-2 and 4-7). At the time the invention was made, it would have been obvious to one of ordinary skill in the art, to incorporate the micro-encapsulated phase change material coated on multiple surfaces of the enclosure as taught by Fitch et al., on the system as taught by Patel et al. and modified by O'Grady, to utilize the additional cooling capabilities of the micro-encapsulated surface coating without a significant increase in weight, size and cost (Fitch et al., column 3, lines 10-15).

4. Claims 14, 25 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patel et al. (PGPub US 2003/0147216) in view of O'Grady as applied above, and further in view of Patel et al. (PGPub US2004/0264124).

- With respect to claim 14, the system as disclosed by Patel et al. '16, and modified by O'Grady satisfies all the limitations of claim 1. While Patel et al. '16 disclose that the electronic components could be broadly construed to mean any type of system board (paragraph 0027), they do not explicitly disclose that one of the electronic components is a blade server. Patel et al. '24 discloses a cooling arrangement for an electronic component system comprising blade servers (Patel et al., '24, "701-712" figure 7, paragraph 0077). It would have been obvious to one of ordinary skill in the art at the time the invention was made, to incorporate the blade servers taught by Patel et al. '24 in the system as disclosed by Patel et al. '16, to efficiently cool the blade servers.
- With respect to claim 25, the system as disclosed by Patel et al. '16, and modified by O'Grady satisfies all the limitations of claim 15. Patel et al. '16 do not explicitly disclose that one of the electronic components is a blade server. Patel et al. '24 discloses a cooling arrangement for an electronic component system comprising blade servers (Patel et al., '24, "701-712" figure 7, paragraph 0077). It

would have been obvious to one of ordinary skill in the art at the time the invention was made, to incorporate the blade servers taught by Patel et al. '24 in the system as disclosed by Patel et al. '16, to efficiently cool the blade servers.

- With respect to claim 36, the system as disclosed by Patel et al. '16, and modified by O'Grady satisfies all the limitations of claim 26. Patel et al. '16 do not explicitly disclose that one of the electronic components is a blade server. Patel et al. '24 discloses a cooling arrangement for an electronic component system comprising blade servers (Patel et al., '24 "701-712" figure 7, paragraph 0077). It would have been obvious to one of ordinary skill in the art at the time the invention was made, to incorporate the blade servers taught by Patel et al. '24 in the system as disclosed by Patel et al. '16, to efficiently cool the blade servers.

5. Claim 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Patel et al., in view of O'Grady as applied above, and further in view of Schwabl (US Patent 5,714,938). The system as disclosed by Patel et al., and modified by O'Grady satisfies all the limitations of claim 15. While Patel et al. discloses means to monitor and control the temperature of the different electronic components (paragraph 0014, 0015, temperature sensor '46' and control chip '48'), they do not explicitly disclose means of

shutting down one or more electronic components upon failure in the fluidic circuit. Schwabl teaches a means of shutting down one or more electronic components upon failure in the fluidic circuit in an electronic component system (Schwabl, abstract, figure 1, "11"). It would have been obvious to one of ordinary skill in the art at the time the invention was made, to incorporate the electronic component shut down device taught by Schwabl, in the electronic component system disclosed by Patel et al., to prevent overheating damage to the electronic components (Schwabl, column 1, line 55).

Patel et al. (6,115,251)

The phase change material applied to the sides of the external panel with the internal panel ("sealing coat") over it (column 2, paragraph 35)

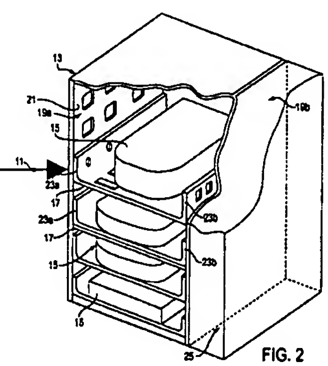

FIG. 2

6. Claim 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Patel et al. (PGPub US 2003/0147216) in view O'Grady as applied above, and further in view of Patel et al. (US Patent 6,115,251). The system as disclosed by Patel et al. '16, and modified by O'Grady satisfies all the limitations of claim 15. Patel et al. '16 do not explicitly disclose applying the phase change material to a surface positioned within the airflow and

applying a sealing coat on top of the phase change material. Patel et al. '51 disclose an electronic component system with the phase change material (Patel et al., '51, abstract) applied to a surface positioned within the airflow with a sealing coat on top of the phase change material. It would have been obvious to one of ordinary skill in the art at the time the invention was made, to incorporate the phase change material and sealing coat as taught by Patel et al. '51 in the electronic component system disclosed by Patel et al. '16, to reduce the overall size of the electronic component system (Patel et al., '51, Column 2, lines 15-25).

Response to Arguments

Applicant's arguments filed on 12/23/2005 have been fully considered but they are not persuasive. Described below are the reasons why.

> Applicant asserts that the Patel et al. (US 2003/0147216 A1) and O'Grady (US 6,170,561 B1) references are not properly combinable, because there is no suggestion, teaching or motivation that their respective teachings be combined to form the disclosure, as alleged. Second, the combination of O'Grady and Patel 1 is improper because the proposed modification of O'Grady would change the principle of operation of the Patel 1 reference, and there can be no reasonable expectation of success for such a combination.

Applicants remarks and Arguments, end of page 8 - beginning of page 9.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention

where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Patel et al. (US 2003/0147216 A1) discloses a self contained cooling system for high power electronic systems, recognizing the importance of providing a "complete integrated data center that houses, cools and powers, and networks electronic components", minimizing the reliance on cooling facilities of the computer room (end of paragraph 0009), since a failure or shutdown of the facilities cooling system can lead to failure of the electronic components and costly consequences for the user (end of paragraph 0010 on page 1). Therefore, Patel et al. ensures redundancy in the cooling equipment within the enclosure by providing multiple heat exchangers and fans. However, the cooling system of Patel et al. is still susceptible to failure of the cooling system components that are outside the enclosure, for instance, the 'remote chiller' (50) and related conduits (136). Meanwhile, O'Grady (US patent 6,170,561) disclose a back up cooling device for electronic components comprising a phase change material for absorbing heat from the air stream upon a cooling system failure (electrical, mechanical, and plumbing system failures of the data centers that house electronic components, as mentioned in column 1, lines 20-25). The failures that O'Grady seeks to protect against are the same type of failures that Patel et al. is susceptible to. O'Grady's also indicates that his phase change material is applied to computer cabinets (third embodiment shown in figure 6 and described in column 4, lines 25-30). Although O'Grady does not explicitly say that

the device with the phase change material '27' is deployed inside the computer cabinet, his illustration in figure 6 indicates that it would be (since mounting rails – similar to mounting rail '20' of Patel et al.- exists inside the computer cabinet). Also, it would have been obvious to one of ordinary skill in the art to incorporate the teaching of O'Grady into the system disclosed by Patel et al. That is, to incorporate the teaching of the phase change material as disclosed by O'Grady within the enclosure disclosed by Patel et al., since Patel et al. do point out the virtues of providing a completely integrated enclosure with minimal reliance on facilities cooling (paragraphs 0009-0019, 0027).

As to the second argument, contrary to the applicant's assertion, the principle of operation of the cooling system of Patel et al. would be unchanged by incorporating the phase change material of O'Grady et al. into it. The principle of operation of Patel et al. as explained in the text of his disclosure is to circulate air (cooled using the heat exchangers 18a and 18b) using the blowers (12a and 12b) through the enclosure. This air flow (28) cools the heat generating components housed in the enclosure and gets heated up in the process. This warmed air (30) is then cooled by the heat exchangers. The heat exchangers in turn transfer the heat to a fluid (shown in Figure 2A). O'Grady discloses the relation between the volume of material required, the amount of heat that is to be removed, and the time the phase change material should provide cooling. Knowing this relation and the amount of heat dissipated by the components of the enclosure, a person of ordinary skill in the art at the time of the invention could calculate the volume of material required to provide supplemental cooling for the required time. For instance, in the case of the enclosure of Patel et al., which generates 250 W of heat

(end of paragraph 0007), a volume of 2.1liters of the material would be required to prevent failure of the components for 1 hour.

$$Volume\ of\ material = \frac{Time\ x\ Total\ heat}{430} = \frac{(3600\ \sec) x\, 250 W}{\left(430\ {}^{W-\sec}/_{ml}\right)} \approx 2.1\,liters \approx 128\,in^3$$

Knowing the volume of the enclosure and the available space, one can calculate the shape and size of the phase change device required. In this case, the enclosure is disclosed to be 78 inches high, 24 inches wide, and 30 inches deep, the size of any shape of the device that will fit the available space of the enclosure can be calculated. For instance, a plate 20 inch deep, 13 inch high and 0.5 inch thick placed along one wall of the plenum '14' or '16' can accommodate the required volume. If the space available for a particular application does not accommodate this size, any other phase change material with a higher heat carrying capacity can be selected by routine experimentation to satisfy the constraints imposed by that specific application. The point is that, knowing the relation (column 3, line 55) disclosed by O'Grady, a suitable shape and size of a phase change device can be incorporated into the cooling enclosure disclosed by Patel et al. without violating its operating principles.

It is also pointed out that O'Grady's phase change device when incorporated within the Patel et al.'s enclosure would be "exposed to the airflow within the enclosure generated by the fan". Any region within the enclosure disclosed by Patel et al. will satisfy this requirement (note the airflow arrows indicated in figure 1).

The applicant also asserts that Fitch et al. (US 6,317,321) cannot be combined with Patel et al. and O'Grady since:

> Fitch discloses incorporating an encapsulated phase change material directly into a semiconductor chip electronic package (Fitch, col. 2, line 46 through column 3, line 5). Fitch does not disclose applying the phase change material to an interior surface of the enclosure as in the present invention.

Applicant's remarks and Arguments, beginning of page 11.

However, Fitch et al. does indicate an electronic apparatus that has the inside surface of the enclosure coated with a microencapsulated form of phase change material (Title, abstract, figure 9 and its description).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Biju Chandran whose telephone number is (571) 272-5953. The examiner can normally be reached on 8AM - 5PM. Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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